

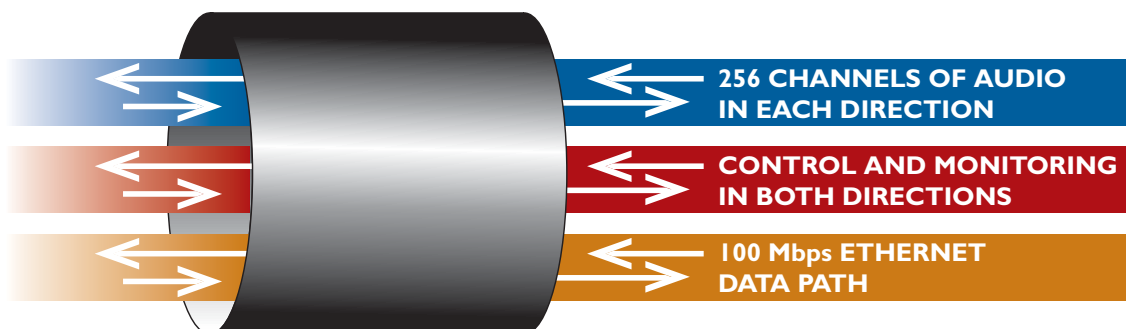
EtherSound ES-Giga System Transport

Preliminary information

EtherSound is a technology providing low latency, synchronized, high-channel-count, bi-directional audio and data transport over standard Ethernet networks. EtherSound is made available to all Audio/Video/Control Manufacturers through a flexible licensing program.

Technical specifications

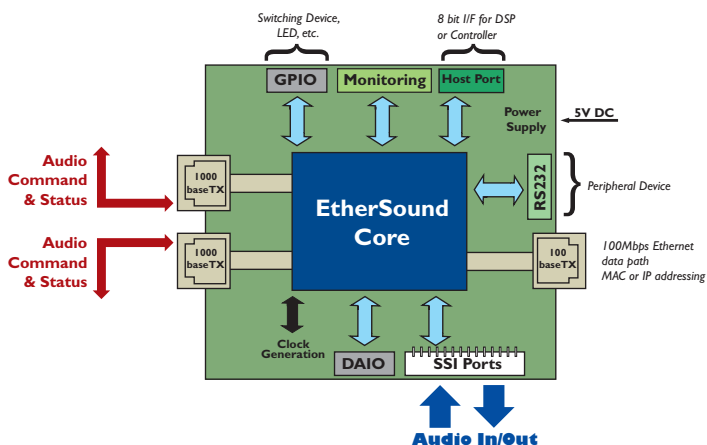
- Fully IEEE 802.3x compliant. Operational with standard Ethernet Layer 1 & 2 network components (cables, fiber optics, switches, media converters, etc.).
- Bandwidth requirements: 1 Gbps dedicated Ethernet network.
- Audio format: 24 bit PCM.
- Sampling frequency: 44.1 or 48 kHz or multipliers/divisors (88.2, 96, 24 kHz, etc.).
- Channel count per 1 Gbps cable: up to 256 channels in each direction (total channel count per system can exceed 512 by "overwriting" existing channels in parts of the network).
- Network architectures: daisy-chain, star or any combination of both: all channels are independent from one another. In bi-directional daisy-chains, all channels are available to all nodes. In star architectures, all channels are available to all nodes "downstream" of the input. Daisy-chain may be looped back for a ring based fail safe operation.
- Audio clock: All devices are synchronized from the audio clock of the first device on the network. Phase can be recovered using a distributed word clock.
- Network latency (SSI in to SSI out): 104 microseconds (five samples at 48 kHz), independent of channel count. (preliminary)
- Added latency per daisy-chained device: under 1.4 microseconds. (preliminary)
- EtherSound is deterministic, with stable latency - delay and phase between any two network nodes can be easily calculated.
- Generic Ethernet data path between connected devices (up to 100 Mbit/s) for Ethernet protocol (such as TCP/IP) based remote control of devices or transport of standard Ethernet traffic.
- Embedded or Ethernet protocol based local and/or remote control of devices with vendor independent command set.
- Embedded vendor independent control and monitoring protocol for GPIO management, RS232 management, channel routing and firmware update.
- Inter-operability: regardless of the product's manufacturer, all products can operate as a unified system on the same network, exchanging audio and control signals.
- Advanced vendor-specific control features can be added.
- Local control through host port for microcontroller-based control system.
- PC-based control application development: via SDK including an API that includes an abstraction layer for multi-vendor support.
- Control application generator with multi-vendor support.



Seamless product integration

Product integration is made easy through flexible licensing and deliverables options. Technology specification and reference designs make hardware implementation easy. Furthermore, the technology provides a high degree of customization thanks to its FPGA based implementation. A library of audio blocks (I8S, TDM, etc.) and control interfaces (host port, GPIO, RS232, MIDI, etc.) options are available from Digigram and EtherSound Implementors for perfect product fit and optimized material cost. Being FPGA based, the cost of goods can be lowered by integrating non EtherSound related functions into the same FPGA.

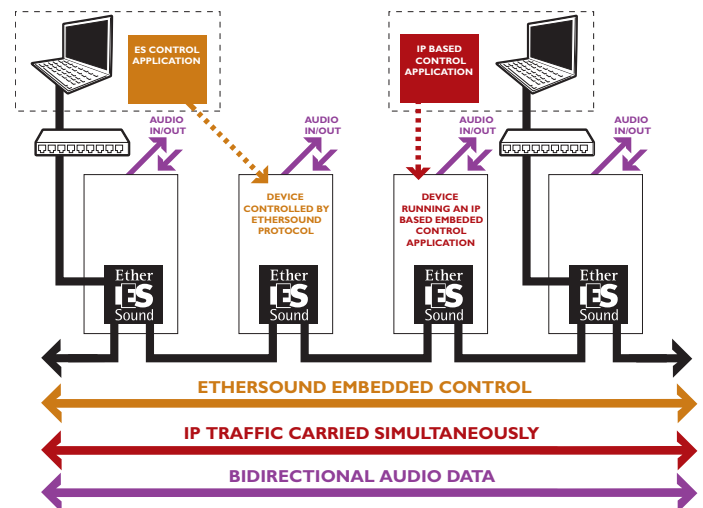
Product integration can also be a short path using ready to use EtherSound modules from Digigram authorized Implementors. Implementors are also the partner of choice for customization of FPGA firmware.



An example of an ES-Giga EtherSound implementation.

Flexible control

Control capabilities embedded into the EtherSound frame and/or IP traffic carried simultaneously allow the design of efficient and open control scheme. Based on the EtherSound SDK, PC control software can be easily developed from scratch or as a plug-in to the EScontrol software. Ethernet based protocols can also be transported or used to control EtherSound devices without requiring an additional cable.



Evaluating EtherSound

A set of EtherSound Evaluation Boards is available to fully exercise the Technology or to prototype products. Dedicated Technical Support Engineer can also assist during this phase.

for further information on EtherSound

technology • protocol • products • applications • evaluation kit • licensing program
visit: www.ethersound.com • email: info@ethersound.com • phone: +1 949 643 1114